PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s)	:	EZZEDDINE	Confirmation No.	:	2659
Application No.	:	10/699,100	Group Art Unit	:	2832
Filing Date	:	OCTOBER 30, 2003	Examiner	:	NGUYEN, T. T.
Docket No.	:	2269-005-03	Customer No.	:	00996
Title	:	MODE-SWITCHING TRANSFORMER			

Commissioner for Patents
PO Box 1450
Alexandria, Virginia 22313-1450

PETITION TO WITHDRAW HOLDING OF ABANDONMENT
37 CFR §1.181; 37 CFR §1.8

Sir:

Applicant hereby notifies the Office of the previous mailing of a response to the final Office Action mailed May 17, 2007, in the above referenced application. The undersigned hereby attests on a personal knowledge basis to the timely mailing of the Response on November 19, 2007 (November 17, 2007, having been a Saturday), a copy of which is included herewith, and respectfully requests that the Notice of Abandonment be withdrawn.

No fee is believed to be due in this instance, however, the Commissioner is hereby authorized to charge any deficiency of fees submitted herewith, or credit any overpayment, to Deposit Account No. 07-1897.

Respectfully submitted,

/J. Mark Han/

J. Mark Han
Registration No. 57,898

Graybeal Jackson LLP
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37 CFR §1.8
CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence is being transmitted via the Office electronic filing system, EFS-Web, addressed to the Commissioner for Patents, PO Box 1450, Alexandria, Virginia 22313-1450 on the date indicated below.

/Lisa S. Susser/
Lisa S. Susser

30 April 2009
Date

PTO/SB/30 (10-07)
Approved for use through 10/31/2007. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Request for Continued Examination (RCE) Transmittal

Address to:
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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Application Number	10/699,100
Filing Date	October 30, 2003
First Named Inventor	Hilal Ezzeddine
Art Unit	2832
Examiner Name	Tuyen T. Nguyen
Attorney Docket Number	2269-005-03

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. See Instruction Sheet for RCEs (not to be submitted to the USPTO) on page 2.

1. Submission required under 37 CFR 1.114 Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

   a. [✓] Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

      i. [ ] Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____

      ii. [ ] Other _____

   b. [✓] Enclosed

      i. [✓] Amendment/Reply

      ii. [ ] Affidavit(s)/ Declaration(s)

      iii. [ ] Information Disclosure Statement (IDS)

      iv. [ ] Other _____

2. Miscellaneous

   a. [ ] Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of _____ months. (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

   b. [ ] Other _____

3. Fees The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

   a. [✓] The Director is hereby authorized to charge the following fees, any underpayment of fees, or credit any overpayments, to Deposit Account No. 07-1897. I have enclosed a duplicate copy of this sheet.

      i. [✓] RCE fee required under 37 CFR 1.17(e)

      ii. [✓] Extension of time fee (37 CFR 1.136 and 1.17)

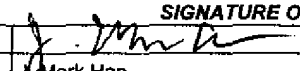
      iii. [ ] Other _____

   b. [✓] Check in the amount of $ 1,860.00 enclosed

   c. [ ] Payment by credit card (Form PTO-2038 enclosed)

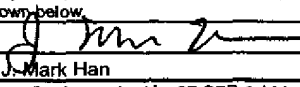
WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

Signature		Date	November 19, 2007
Name (Print/Type)	J. Mark Han	Registration No.	57,898

CERTIFICATE OF MAILING OR TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450 or facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.

Signature			
Name (Print/Type)	J. Mark Han	Date	November 16, 2007

PTO/SB/22 (10-07)
Approved for use through 10/31/2007. OMB 0651-0031
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Under the paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless if displays a valid OMB control number.

PETITION FOR EXTENSION OF TIME UNDER 37 CFR 1.136(a) **FY 2006** ***(Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).)***	Docket Number (Optional) 2269-005-03
Application Number 10/699,100	Filed October 30, 2003
For MODE-SWITCHING TRANSFORMER	
Art Unit 2832	Examiner Tuyen T. Nguyen

This is a request under the provisions of 37 CFR 1.136(a) to extend the period for filing a reply in the above identified application.

The requested extension and fee are as follows (check time period desired and enter the appropriate fee below):

		Fee	Small Entity Fee	
☐	One month (37 CFR 1.17(a)(1))	$120	$60	$
☐	Two months (37 CFR 1.17(a)(2))	$460	$230	$
☒	Three months (37 CFR 1.17(a)(3))	$1050	$525	$ 1,050.00
☐	Four months (37 CFR 1.17(a)(4))	$1640	$820	$
☐	Five months (37 CFR 1.17(a)(5))	$2230	$1115	$

☐ Applicant claims small entity status. See 37 CFR 1.27.

☒ A check in the amount of the fee is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director has already been authorized to charge fees in this application to a Deposit Account.

☒ The Director is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account Number 07-1897. I have enclosed a duplicate copy of this sheet.

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

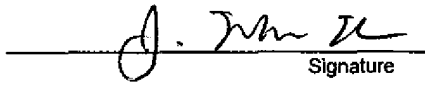
I am the

☐ applicant/inventor.

☐ assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed (Form PTO/SB/96).

☒ attorney or agent of record. Registration Number 57,898

☐ attorney or agent under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____



Signature — November 19, 2007 — Date

J. Mark Han — Typed or printed name

425-455-5575 — Telephone Number

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

☒ Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.136(a). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 6 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor:	Hilal Ezzeddine
Title:	**MODE-SWITCHING TRANSFORMER**
Serial No.:	10/699,100
Filing Date:	October 30, 2003
Examiner/Unit:	Tuyen T. Nguyen / 2832
Attorney Docket No.:	2269-005-03

CERTIFICATE OF MAILING

I hereby certify that this paper or fee is being deposited with the United States Postal Service as First Class Mail addressed to: Mail Stop AF, Commissioner for Patents, P.O. BOX 1450, Alexandria, VA 22313-1450

on this 19th day of November, 2007 by

Signature

RESPONSE TO FINAL OFFICE ACTION OF MAY 17, 2007

TO THE COMMISSIONER FOR PATENTS

This communication is made in response to the above-referenced Office Action and it is requested that the examiner please amend and reconsider the application in view of this communication.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 6 of this paper.

WHAT IS CLAIMED:

1. (Previously Presented) A mode-switching transformer comprising a first line in common mode and a second line in differential mode, each line comprising two sections in series respectively coupled with one of the two sections of the other line and all sections having the same lengths, wherein the common mode line is connected in series with a capacitor, to lower a central frequency of a bandwidth of the transformer, the $\lambda/4$ lengths of the sections being chosen to correspond to a central frequency greater than a desired central frequency for the transformer.

2. (Previously Presented) The transformer of claim 1, wherein the value of capacitor C respects the following relation:

$$C = \frac{1}{2\pi f_0 Z_c \, tg(\beta L)},$$

where f_0 designates the desired central frequency , where L designates the length of the two sections in series calculated in $\lambda/2$ from said central frequency greater than the desired central frequency, where Z_C designates the characteristic line impedance, and where β designates the phase constant.

3. (Previously Presented) The transformer of claim 1, in which each section is a plane spiral, two first sections being formed in a first conductive layer of a multilayer circuit and being laterally spaced from each other, the two other sections being also formed in said first conductive layer and being respectively interlaced with the first sections, at least one armature of the capacitor being formed in said first conductive layer and connections being formed in a second conductive layer, the two conductive layers separated by a dielectric.

4. (Previously Presented) The transformer of claim 3, in which the capacitor is located in the center of the spirals of the first sections.

5. (Previously Presented) The transformer of claim 1, formed in two conductive levels separated by a dielectric, two sections and one armature of the capacitor being patterned in each conductive level.

6. (Original) The transformer of claim 1, wherein the transformer is applied to frequencies on the order of one gigahertz.

7. (Previously Presented) A mode-switching transformer, comprising :

a common mode winding;

a differential mode winding electromagnetically coupled with the common mode winding; and

only one capacitor electrically coupled to the common-mode winding.

8. (Original) The mode-switching transformer of claim 7 wherein the common mode winding comprises two sections and the differential mode winding comprises two sections, each section having an equal length.

9. (Original) The mode-switching transformer of claim 7 wherein a central frequency of the transformer is in the gigahertz frequency range.

10. (Original) The mode-switching transformer of claim 8 wherein the length of each section of each winding is equivalent to a quarter of the length of a first frequency, wherein the first frequency is greater than a central frequency of the transformer.

11. (Original) The mode-switching transformer of claim 7 wherein the common mode winding is formed within a first metallization layer and the differential mode winding is formed within a second metallization layer, the two metallization layers separated by a dielectric.

12. (Previously Presented) The mode-switching transformer of claim 7 wherein the capacitor comprises a first armature disposed in a first metallization layer and a second armature disposed in a second metallization layer, the two metallization layers separated by a dielectric.

13. (Withdrawn) An integrated circuit, comprising :

a mode-switching transformer, including,

a common mode winding;

a differential mode winding electromagnetically coupled with the common mode winding; and

a capacitor electrically coupled to the common-mode winding.

14. (Withdrawn) The integrated circuit of claim 13 wherein the integrated circuit comprises a communications circuit.

15. (Withdrawn) The integrated circuit of claim 13 wherein the common mode winding comprises two sections and the differential mode winding comprises two sections, each section having an equal length.

16. (Withdrawn) The integrated of claim 13 wherein a central frequency of the transformer is in the gigahertz frequency range.

17. (Withdrawn) The integrated circuit of claim 15 wherein the length of each section of each winding is equivalent to a quarter of the length of a first frequency, wherein the first frequency is greater than a central frequency of the transformer.

18. (Withdrawn) The integrated circuit of claim 13further comprising a plurality of series-connected mode-switching transformers.

19. (Withdrawn) An electronic system, comprising :

an integrated circuit, including,

a mode-switching transformer, including,

a common mode winding;

a differential mode winding electromagnetically coupled with the common mode winding; and

a capacitor electrically coupled to the common-mode winding.

20. (Withdrawn) The electronic system of claim 19 wherein the integrated circuit comprises a communications circuit and wherein the electronic system comprises a mobile telephone.

23. (Withdrawn) A method of reducing a central frequency of a transformer having first and second windings, the method comprising :

sizing the windings based upon a first frequency that is greater than the desired central frequency of the transformer; and

coupling a capacitance to the first winding.

22. (Withdrawn) The method of claim 21 wherein the central frequency is in the gigahertz frequency range.

23. (Withdrawn) The method of claim 21 wherein sizing the windings comprises :

forming first and second series-connected windings to form the first winding, each of the series-connected windings having a length approximately equal to a quarter of a wavelength of the first frequency; and

forming first and second series-connected windings to form the second winding, each of the series-connected windings having a length approximately equal to a quarter of a wavelength of the first frequency.

REMARKS/ARGUMENTS

Claims 1-12 are currently pending. In light of the following, all of the claims are in condition for allowance. If after considering this response the Examiner believes that not all of the claims are allowable, the Examiner is requested to schedule a telephone interview with the Applicant's attorney to further the prosecution of this application.

Rejection of claims 1 and 3-12 under 35 U.S.C. § 103(a) as being unpatentable over AAPA in view of Waffenschmidt et al. (US 6,529,363)

Claim 1

Claim 1 recites a mode-switching transformer comprising a first line in common mode and a second line in differential mode, wherein the common mode line is connected in series with a capacitor to lower a central frequency of a bandwidth of the transformer.

For example, referring, *e.g.*, to FIG. 3 and paragraphs 26-30 of the present application, a mode-switching transformer 10 comprises a first line (sections 5' and 6') in common mode and a second line (sections 7' and 8' and junction point 9) in differential mode, wherein the common mode line is connected in series with a capacitor C. Because the capacitor C is specifically used to lower the central frequency of the bandwidth of the transformer, the sections 5', 6', 7', 8' may be sized for higher operating frequencies. As a result, the sections 5', 6', 7', 8' may be shorter in length, and thus, the size of the transformer and the insertion losses may be reduced.

Waffenschmidt, on the other hand, does not teach a mode-switching transformer comprising a first line in common mode and a second line in differential mode, wherein the common mode line is connected in series with a capacitor to lower a central frequency of a bandwidth of the transformer. Instead, Waffenschmidt simply teaches a switched-mode power supply having a capacitor in a transformer 16 (FIG. 3). This switched-mode power supply, however, is entirely different from a mode-switching transformer. A switched-mode power supply aims at switching a DC power supply to pass through an isolation barrier made by a transformer. In contrast, a mode-switching

transformer aims at converting a common mode signal into a differential mode signal without any switch. Because the switched-mode power supply of Waffenschmidt is not even in the same field as the mode-switching transformer of the present application, it follows that Waffenschmidt does not suggest lowering the central frequency of the bandwidth of the transformer with the capacitor. Furthermore, Waffenschmidt does not even suggest a transformer having common mode windings and differential mode windings. In fact, after reviewing Waffenschmidt in its entirety, the Applicant's attorney is unable to find any mention of a mode-switching transformer, let alone lowering the central frequency of the transformer with a capacitor.

The Examiner states on page 2 of the office action that Waffenschmidt teaches using a capacitor in series with a winding structure for the purpose of lowering the central frequency of the transformer. However, there is no mention whatsoever in Waffenschmidt of adding a capacitor in series with a winding structure for the express purpose of lowering the central frequency of the transformer. Not only is the Applicant's attorney unable to find any such language in Waffenschmidt, but the Examiner is also unable to point out any such language in Waffenschmidt in the office action.

Furthermore, attached is a Declaration pursuant to 37 C.F.R. § 1.132 traversing this rejection by way of evidence from a technical expert. Please note that the technical expert was unavailable to sign the Declaration under 37 C.F.R. § 1.132. An original Declaration under 37 C.F.R. § 1.132 including the technical expert's signature will be filed shortly.

Therefore, not only is there no motivation to combine the teachings of Waffenschmidt with the Applicant's admitted prior art (AAPA), but the combination would not even lead to the invention as recited in claim 1.

Claim 7

Claim 7 recites a mode-switching transformer comprising a differential mode winding electromagnetically coupled with a common mode winding, and only one capacitor electrically coupled to the common-mode winding.

Claim 7 is patentable for reasons similar to those recited above in support of the patentability of claim 1. As discussed above, Waffenschmidt simply teaches a switched-mode power supply having a capacitor in a transformer. After reviewing Waffenschmidt in its entirety, the Applicant's attorney is unable to find any mention of a mode-switching transformer, let alone a capacitor coupled to the common mode winding. Therefore, not only is there no motivation to combine the teachings of Waffenschmidt with the Applicant's admitted prior art (AAPA), but the combination would not even lead to the invention as recited in claim 7.

Claims 3-6 and 8-12

Claims 3-6 and 8-12 are patentable by virtue of their respective dependencies from independent claims 1 and 7.

CONCLUSION

In view of the foregoing, claims 1-12 are in condition for allowance, and that action is respectfully requested.

In the event additional fees are due as a result of this amendment, you are hereby authorized to charge such payment to Deposit Account No. 07-1897.

If, after considering this response, the Examiner does not agree that all of the claims are allowable, then it is respectfully requested that the Examiner contact the Applicant's attorney at (425) 455-5575.

Respectfully submitted,

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor:	Hilal Ezzeddine
Title:	**MODE-SWITCHING TRANSFORMER**
Serial No.:	10/699,100
Filing Date:	October 30, 2003
Examiner/Unit:	Tuyen T. Nguyen / 2832
Attorney Docket No.:	2269-005-03

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on this 19th day of November, 2007 by

Signature

DECLARATION PURSUANT TO 37 C.F.R. § 1.132

TO THE COMMISSIONER FOR PATENTS:

This Declaration traverses the rejection of claims 1 and 3-12 under 35 U.S.C. § 103(a) as being unpatentable over AAPA in view of Waffenschmidt et al. (US 6,529,363).

I, Michael Callahan, hereby declare the following:

1) I am a technical expert in the field of electrical circuits and devices, including transformers.

2) I have reviewed the present application and the Waffenschmidt reference (US 6,529,363).

3) Claim 1 of the present application recites a mode-switching transformer comprising a first line in common mode and a second line in differential mode, wherein the common mode line is connected in series with a capacitor to lower a central frequency of a bandwidth of the transformer.

4) Applicant's admitted prior art (AAPA) of FIG. 2 of the present application discloses a mode-switching transformer 1 having a first line (sections 5 and 6) in common mode and a second line (sections 7 and 8 and junction point 9) in differential mode. By definition, the mode-switching transformer 1 aims at converting a common mode signal into a differential mode signal.

5) The Waffenschmidt reference discloses a switched-mode power supply having a capacitor in a transformer 16 (FIG. 3). By definition, the switched-mode power supply aims at switching a DC power supply to pass through an isolation barrier made by the transformer 16.

6) The Waffenschmidt reference does not disclose or suggest a transformer having common mode windings and differential mode windings. In fact, there is no mention whatsoever of a mode-switching transformer in the Waffenschmidt reference.

7) The Waffenschmidt reference does not disclose or suggest lowering the central frequency of a transformer with a capacitor. In fact, there is no mention whatsoever of adding a capacitor in series with a winding structure for the purpose of lowering the central frequency of the transformer in the Waffenschmidt reference.

8) Because the switched-mode power supply of Waffenschmidt is not even in the same field as the mode-switching transformer of the present application, there is no motivation to combine the teachings of Waffenschmidt with the Applicant's admitted prior art (AAPA).

9) Furthermore, because Waffenschmidt does not disclose or teach lowering the central frequency of a transformer with a capacitor, the combination of Waffenschmidt and the Applicant's admitted prior art (AAPA) would not even lead to the invention as recited in claim 1.

10) I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Michael Callahan _____

Full Name Citizenship

_____

Residence

_____ _____

Signature Date